WAR TIME OCCUPATIONS

FLORENCE O. BEAN

1918

FIG. 1

WAR TIME OCCUPATIONS

A MANUAL OF SIMPLE CONSTRUCTIVE WORK SUITABLE FOR HOME AND SCHOOL

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BOOKBINDING FOR BEGINNERS

DRAWINGS MADE BY
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PRICE TWENTY-FIVE CENTS

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By Florence O. Bean

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CONTENTS

1. Aims – Pedagogical or Productive . . 3
2. Standards 5
3. Materials 6
4. Tools 8
5. Cutting, Pressing and Pasting . . . 10
6. Construction of a Rectangle . . . 12
7. Scrap Card 13
8. Scrap Book 14
9. Picture Puzzles 16
10. Envelopes 18
11. Tangram 22
12. T Puzzle 22
13. Bags 24
14. Dominoes 26
15. Domino Cases 29
16. Slip Box 32
17. Checker Board 33
18. Checkers 37
19. Knitting Needles 39
20. Trench Candles 40

FOREWORD

"Teacher, teacher, what shall I do?
I'm all through, I'm all through;
I've finished all I've begun;
What shall I do now I've got that done?"

So paraphrased a clever teacher the insistent demands of her pupils for something further to do. Many have been asked, but fewer have answered to wholly mutual satisfaction.

Now comes the great war which touches more or less the lives of every one of us, and with one voice we cry, "What shall I do to help?" Whatever may be said on the other side, it is certain that as a nation we shall reap many benefits, and some of them are already apparent in the increased industry of the people, their plainer mode of living, and their greater seriousness of thought.

This little volume presents an educational opportunity arising out of the situation, and incidentally formulates an answer to the eager questioning of youth. It shows how the handwork of children may meet a real demand, and thereby re-act on the interest and enthusiasm of children to be a part of real life. There has been no attempt to include such products as require technical skill or advanced knowledge. Everything here described is of simple character and was originally intended as part of an elementary manual training course.

The possibility of producing these articles by classes of young children was fully demonstrated in the Boston Public Schools when thousands of them were sent to the Metropolitan Chapter of the Red Cross for use in the Christmas bags. Experience has also proved the feasibility of such production at home, in a church

parlor, or a club-room, with workers of all ages. When completed they may be sent to individual soldiers or turned over to the local Red Cross chapter whose officials should of course first be consulted concerning the expediency of sending the gifts.

Occupations for convalescent soldiers are already attracting attention and here are suggestions for one line of activity, which has already been tried out with success.

The writer lays no claim to having originated all the suggestions herein contained for there have been many with willing hearts and resourceful minds who have assisted greatly in developing the projects and suggesting means for carrying them out.

Miss Maude G. Leadbetter, Director Junior Department of New England Division, took the initiative in requesting the production of the work. Her unfailing appreciation and that of her associates has been a constant source of inspiration and a full reward for the effort occasioned.

The Boston teachers of the fourth and fifth grades deserve great credit for their many and helpful suggestions for modifications and processes.

As always Mr. John C. Brodhead of the Department of Manual Arts, Boston Public Schools, was of constant help and inspiration, and Mr. Edward C. Emerson of the same department gave much practical assistance. The drawings of Mr. George M. Morris speak for themselves.

Grateful acknowledgment is also due Miss Harriet F. Smith, who designed the chessmen and the arrangement of the title page and cover.

That the simple problems here offered may serve the two-fold purpose of assisting manual training to be in touch with the vital interests of the time, and of utilizing the products of manual training to give comfort and cheer to our soldiers and sailors is the earnest hope of

THE AUTHOR.

AIMS—PEDAGOGICAL OR PRODUCTIVE.

In producing the articles here described it is possible to kill the proverbial two birds or to aim straight at the one leaving the other to go undisturbed. But before taking aim one should decide what he intends to hit.

If the aim is production alone, as would be true in clubs, some points that are of educational value may be omitted. The work may be portioned out so that some individuals always do one thing and some another, the object being to turn out as many finished products as possible.

On the opposite side, if the production of these articles is subordinate to hand training and used as a means to an end quite different methods should be followed. The finished article should be shown to the class and its construction carefully discussed. Working drawings should be worked out at least on the blackboard and may be made by individuals on paper at their desks. It is not necessary nor always advisable that the drawings should be made to scale, in fact freehand sketches which record the thought and plan of the worker are all that are necessary as guides. With small children a straight edge may be used to insure straight lines and nullify a tendency to drop into slipshod methods and to be satisfied with slovenly results. Dimensioning should be done according to accepted methods and the teacher should have knowledge of the correct use of dimension and extension lines, arrow heads, etc. However simply "mechanical drawing" is taught there should be nothing for the pupil to unlearn in later advanced work.

The laying out of the parts on the various materials should be done accurately and carefully whether the

drawings were made accurately or simply sketched as above suggested, and here the teacher shows her insight by determining which method is best adapted to her class.

This is not the occasion for a pedagogical treatise and so the good teacher is advised to pursue her usual methods of presentation when adapting the contents of this book to her use.

To those who are inexperienced in ways pedagogical, but who have some skill of hand, a little practice combined with a judicious amount of common sense will make the way plain.

STANDARDS.

It is quite essential that high standards be maintained especially in accepting articles for distribution. To be sure, there is in the act of constructing a definite educational value to the child who puts forth an effort. The opportunity to contribute in any way to a worthy cause is most inspiring, and often productive of results far above the ordinary. All these facts should be considered in judging the work from a pedagogical standpoint. But when the final judgment is pronounced, nothing should be accepted which has not a commercial value, which would not be a marketable product. The recipient to be is probably not more interested in the producer than are you when you purchase a game at the toy store. The fact that only the best is to be used often has a most salutary effect upon the worker whether child or adult.

In any case it is well to have a "censor" as it were who shall accept or discard all articles before they are forwarded to any distributing agency.

MATERIALS.

For the most part the materials here specified are inexpensive and may be purchased of a school supply house. Those that are in general use like newspapers, cloth, paints, crayons, etc, are not listed. When purchasing a supply it is well to see at least samples of all goods. Vellum and lining paper should harmonize in color An analogous harmony is preferable to a contrast.

Newsboard.

A heavy cardboard used for the foundation of bookcovers, and articles of similar construction, etc., The commercial size of each sheet is 26″x38″ which comes in various weights specified by a number indicating how many sheets there are in each 100-lb. bundle. For convenience in handling, the sheets should be cut by the dealer into quarters, that is 13x19 and for the purposes here specified No. 50 is recommended.

Vellum.

A cloth in common use by bookbinders for covering. It comes in many colors but the darker tones are more serviceable. A middle green, brown, and deep red are very satisfactory, and are more easily matched with lining paper, cord, or other accessories. Vellum is bought by the yard and approximates one yard in width.

Lining Paper.

There are so many varieties of paper under this designation that no attempt can be made to describe them. It is sold by the sheet, quire, or ream, and can

be obtained from a bookbinder or a school supply house. Some of the cheapest qualities are too thin to be handled by inexperienced workers and in choosing, one should select a paper that is tough enough to be handled when wet with paste.

Eyelets.

In purchasing choose the same make as the eyelet punch and specify the 3/16 inch size. If punch and eyelets are of different makes they do not always fit.

TOOLS.

Only simple tools are needed for construction, most of which may be purchased at a school supply house or a hardware store.

Pencils.

Hard or medium for construction work.
Soft for darkening squares of checkerboard.

Foot Rule.

Divided into eighths or sixteenths.

Scissors.

Six or seven inches long.

Triangle.

Of wood, with open frame, each of the small angles 45 degrees. This is used in constructing right angles.

Eyelet Punch.

This is necessary if eyelets are to be inserted. A simple style operated by hand is recommended for general use. The same punch is useful for making holes in the dominoes.

Conductor's Punch.

A lighter and cheaper variety than the eyelet punch but can be used only for punching holes **not** inserting eyelets. If additional punches are needed for making the dominoes this kind answers the purpose just as

well. These punches are made to cut a great variety of shapes, therefore one should be careful to select a punch with a round hole of approximately 1/8 inch diameter.

Cardboard Cutter.

This as its name implies is used for cutting cardboard either heavy or light and may also be used for cutting paper or vellum. It consists of a board marked off into half-inch squares, with knife attached at the side. The fifteen-inch size is best for general use although the lighter and cheaper twelve-inch size will do.

Any other tools referred to are either to be found in household use or may be purchased as suggested above.

CUTTING, PASTING, AND PRESSING.

The methods by which these three processes are carried on make all the difference possible in the results, and one should be certain that the best methods are first **known** and then **followed.**

Cutting.

1. **Cardboard Cutter.** This should be used for all heavy cardboard, and may be used for other materials.

2. **Scissors.** All light weight materials may be cut with scissors. If the work is given for educational purposes, much cutting should be done with scissors as this affords excellent hand training. To cut well, the materials should be held in the left hand, and the cutting should be done on the line at the left. The material should be turned so that one side after another occupies this position. The scissors should be opened as wide as possible, and all cutting begun near the joint. Always cut past the corners except when cutting an interior angle. Vellum may be torn lengthwise but not crosswise. A torn edge may be used when it is to be covered, but not otherwise.

Pasting.

Paste is more satisfactory for use when placed in a shallow open-mouthed receptacle. It should be applied with a brush and the hands kept as free from paste as possible. Plenty of clean newspapers should be at hand so that fresh surfaces are always available. Lay the material to be pasted upon a sheet of newspaper, and apply the paste evenly. If any lumps from the paste or hairs from the brush have adhered to the surface, be sure that they are carefully removed, as otherwise they will show through. Be prepared to use

the pasted surface immediately, for if it is allowed to stand, it either becomes too dry, or soaks into the material distorting its shape.

When newsboard and vellum are to be pasted together, apply the paste to the surface of the latter, having previously marked with pencil the position the newsboard is to occupy. When the paste has been evenly spread, press the newsboard upon the vellum; then turn them over and rub the vellum vigorously upon the right side.

Cut the corners after the newsboard has been pasted to the vellum. (See Plates 7 and) for correct cutting.) Care should be exercised in making these cuts as the appearance of the corner is of great importance.

Before turning over the laps it will be necessary to apply more paste. When this has been done turn over that on the farthest side pulling it over on to the newsboard with considerable force. Turn the work around so that the lap opposite to that first pasted will be farthest away; fold and paste that. Do not fold the edge of the vellum under but paste the raw edge flat. All laps should cling closely to the newsboard and be thoroughly rubbed down.

Warping is likely to appear when only one side of the newsboard has been covered, but this is removed when the opposite side is covered and pressed.

Pressing.

Best results cannot be obtained without pressing. All pasted articles should be put under weight when drying, whether they are completed articles or not. A hand press, while convenient, is by no means essential. A pile of heavy books, a box of brick or stone, in fact any article of sufficient weight to press may be substituted. If several articles are to be pressed at once so that they need to be arranged in layers, these layers should be separated by several sheets of newspaper or newsboard to expedite the drying out of moisture.

CONSTRUCTION OF A RECTANGLE.

A fair degree of accuracy is desirable in all articles here described, and in some of them it is quite essential. All corners should be right angles to bring the work to proper standard. When a rectangle is to be laid out either on paper or any of the bookbinding materials to be used, follow the mode of procedure given below.

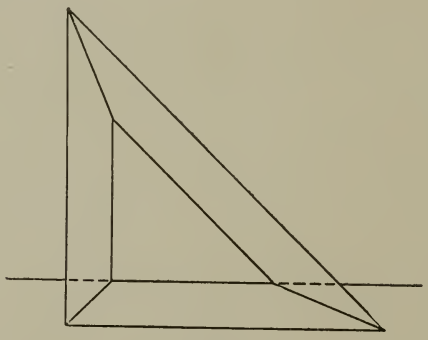


FIG. 2

Near the lower edge of the surface to be used draw a line, all the way across. On this lay off the length of one long side of the rectangle placing two points to mark it. At these points place the triangle as shown in Figure 2 and erect the perpendiculars. Notice that the **inside** of the triangle is placed against the base line while the perpendicular is drawn against the **outside.**

On these perpendiculars lay off the width of the rectangle. Before drawing the fourth side by con-

necting the points thus placed the distance between them should be measured to see if it exactly corresponds with the distance first laid off. If there is any discrepancy this shows that the angles are not absolutely correct and should be adjusted before the fourth side is drawn.

If a triangle is not available the square corner of a card may be substituted.

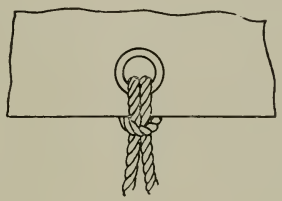


FIG. 3

SCRAP-CARD.

Materials: Cardboard, clippings, paste.

Cut a piece of cardboard 5″x12″. On both sides, mount jokes, interesting short stories, pictures or poetry. About half an inch down from the center of the top, punch a hole and insert a piece of twine 10″ long. When this twine is of the right length, double it, put the loop through the hole, and pull the ends through the loop. (See Fig. 3.)

These cards are hung on beds in hospitals.

SCRAP-BOOK.

Materials: Pages from magazines, clippings and wrapping paper.

I. Many magazines and papers contain good short stories while for various reasons it may not be desirable to send the whole publication. Such stories may well be made up into scrap-books and serve to beguile many a monotonous hour.

Do not paste the stories to a foundation page, but take whole pages from a magazine, even if there is some irrelevant printing. This not only makes less work, but insures a neater page, and lessens the weight. Use several stories on pages of the same size. For covers, use a sheet of smooth clean wrapping paper folded through the center. Against the inside of this fold, place the pages which have been trimmed to uniform width, and with covers closed, stitch the entire length of the page, either on sewing machine or by hand with two threads. The titles of the stories or articles may be printed or written on the cover.

II. Make a book with leaves of wrapping paper each the size of a postcard. To these paste small clippings and pictures. Use colored postcards for the covers and fasten together at one short edge of each. This is easily carried in the pocket and when read is quite likely to be passed on.

III. Fold sheets of wrapping paper to form pages about the size of an ordinary magazine and stitch them through the fold. To these paste stories, poetry, pictures, or any clippings likely to amuse or interest. Do not use those which are sad or harrowing.

FIG. 4

PICTURE PUZZLES.

In selecting pictures for this purpose, choose those that are pleasing and of probable interest to men. Colored pictures are much to be preferred to those in black and white, or even in brown. So many of the magazines and advertising circulars offer excellent colored pictures that they are not difficult to procure.

I. Post Cards.

An interesting post card cut into fifteen to twenty-five pieces makes a good simple puzzle. Use sharp scissors for cutting, and make straight lines only. Put the pieces into a small envelope properly labeled. (See Page 17).

II. Mounted on Cardboard.

Select a picture (not larger than 9″x12″); paste it smoothly and securely to heavy cardboard, and dry it under weight. If there are any blisters or rough places, the value of the puzzle is very much lessened. When thoroughly dry, use the cardboard cutter to cut into irregular pieces. If scissors are used, the edges are quite likely to be rough, and unless they are smooth no puzzle can be put together with any degree of satisfaction. All lines should be straight—no curves. Cut the puzzle first into four or five large pieces, and these into smaller ones. Good judgment as to the size of pieces should be exercised. If too large, there is very little "puzzle". if too small, the fussiness takes away the interest.

When cut, it is advisable to "check up" by having the puzzle put together.

Place the piece in an envelope (See Plates 1 and 3) or a bag (See Page 24) and securely fasten.

III. Mounted on Wood.

Select a well colored interesting picture, and mount it carefully on thin wood. Larger pictures may be used for this than those mounted on cardboard if desired. A scroll-saw should be used for cutting these, and curved lines as well as straight may be used. Try to avoid making long narrow pieces which are likely to split off. Rub the edge of each piece with fine sandpaper to smooth off any roughness left by the saw, but do not change the shape or round the edges.

When finished put the pieces in a box or bag.

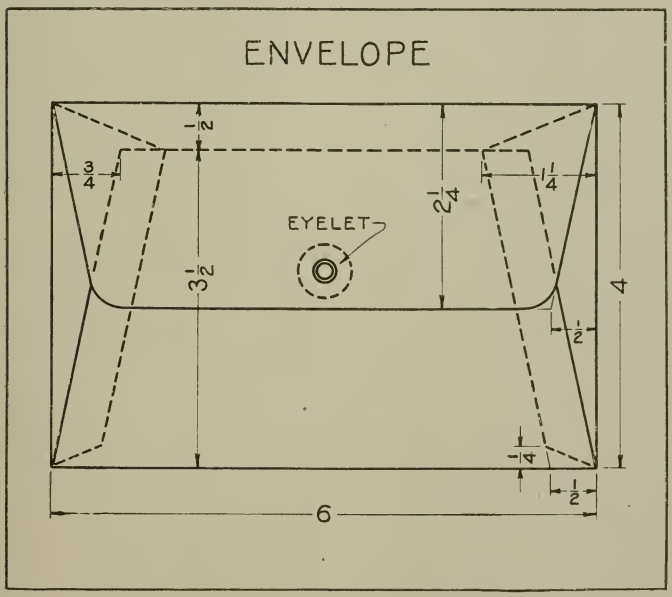


PLATE 1

ENVELOPES.

Material: Wrapping paper.

Small envelopes are easily constructed from a rectangle. The size may be varied but the two drawings (Plates 1 and 3) are of suitable dimensions as indicated.

To construct small envelope: First draw outside rectangle which includes whole envelope. (See Plate 2). From the sides, top, and bottom lay off correct distances to make small rectangles at the corners. Connect these points by light lines. Cut first the outside lines and then the four small rectangles from each corner. Fold long edges together but **do not crease** through the center. With the scissors round off the corners of flaps, and curve the opening. This is more pleasing than an unmodified rectangle. (For suggestions see Plate 3).

Make the proper folds on the lines and crease **hard** with edge of rule or folder. Paste first the long edges and then the bottom flap.

A larger envelope may be constructed in the same manner. That shown in Plate 1 is of another style and its construction may be determined by a study of the drawing.

Upon the face of the envelope in good hand lettering well placed indicate the use of the contents. If the name of the maker is to be added the flap of the envelope is the best place for it.

When in use the flap of the envelope should be fastened so that the contents will not fall out.

A. It may be lightly pasted down so that the envelope can be opened without tearing.

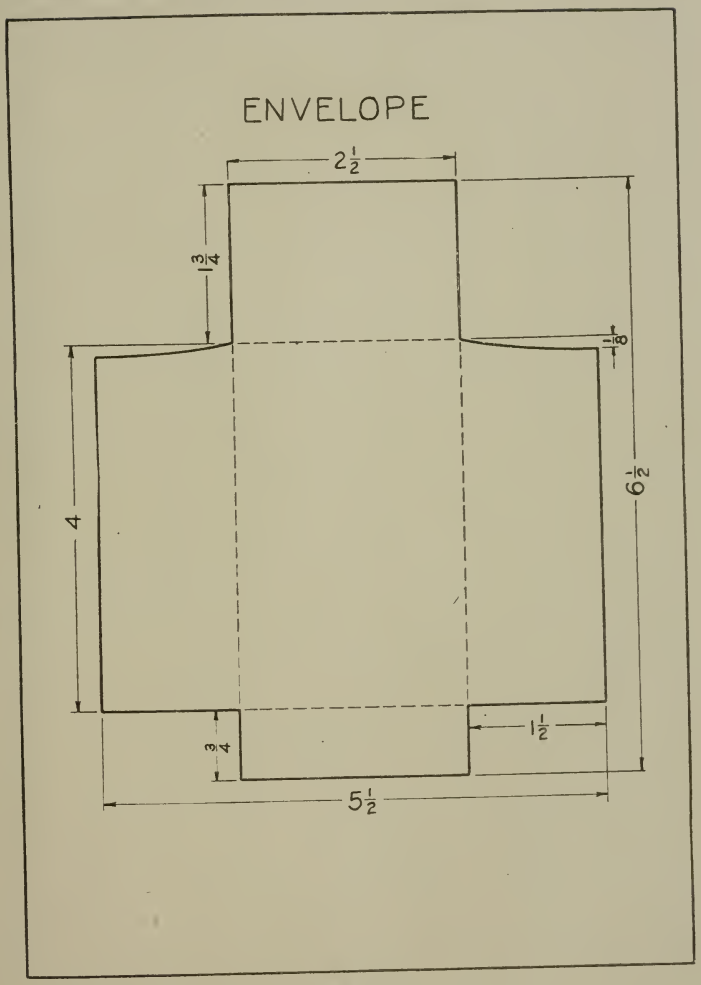


PLATE 2

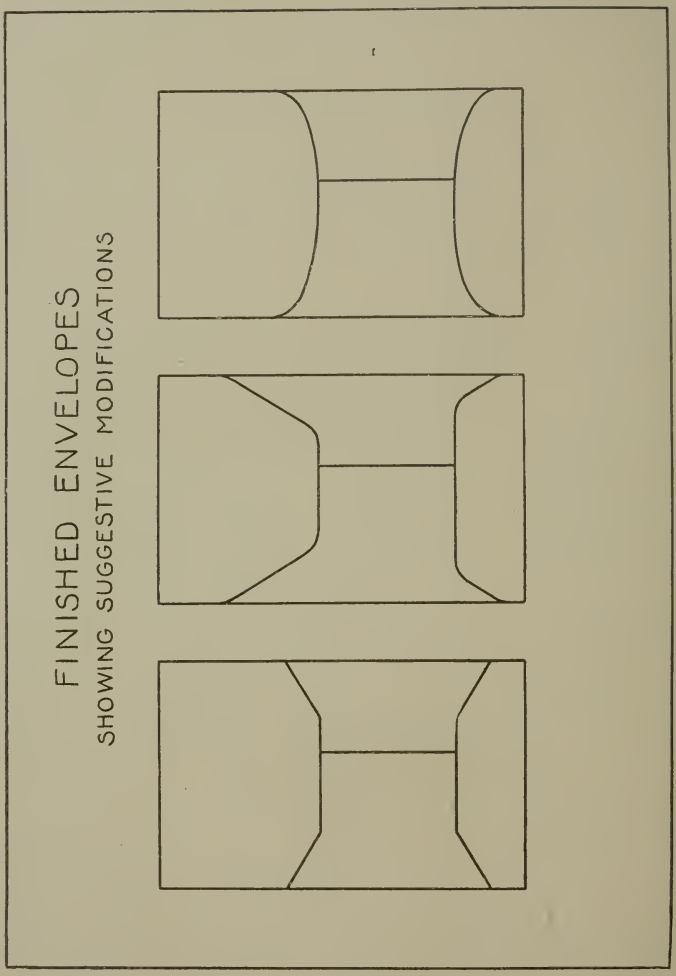


PLATE 3

B. A piece of twine may be tied around the envelope both across and lengthwise.

C. In the center of one side of the flap plan to punch a hole. This should first be re-enforced by cutting from heavy paper a circle of 3-16 to 3-8 radius and pasting it in the correct place. Through both thicknesses punch the hole. Into this insert twine as shown in Figure 3 and use this to tie the envelope.

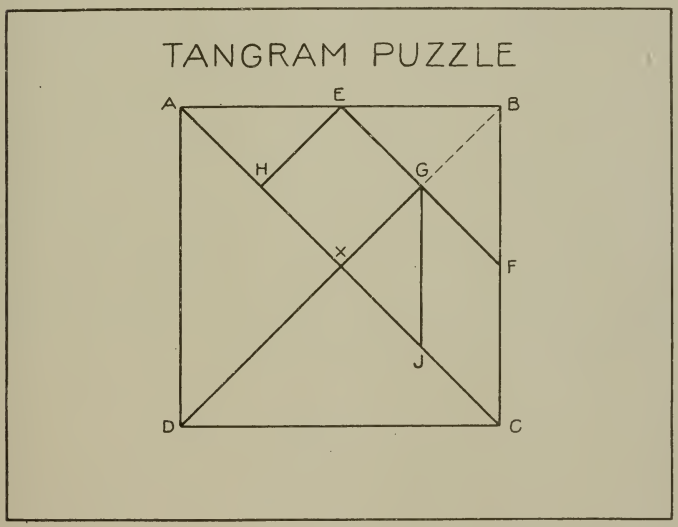


PLATE 4

TANGRAM.

Material: Heavy Cardboard.

This is said to be a Chinese puzzle, dating back several thousand years. The pieces not only may be returned to the original square, but when accurately drawn and cut will also form a rectangle, a rhomboid, and more than a hundred irregular but pleasing figures. Construct this as shown in Plate 4, beginning with a square A B C D. This may be of any size, but Find the center of each side above the diagonal, E and F. Connect these points. Place the rule as if to draw the second diagonal, but draw from A only as far as the line E F. Lay off the distance X G on the complete diagonal each side of the center. (On a 3 1-2″ square this distance is practically 1 1-4″.) Draw lines E H and G J. E G X H will be a square, if the drawing is accurate. Cut the pieces (7) very carefully on the lines, preferably using the cardboard cutter, and place them in a small envelope properly lettered.

T PUZZLE.

Material: Heavy Cardboard.

Plate 4 shows the parts assembled. The best method of construction is to draw the top line for the base and from it with the triangle erect the perpendiculars; in other words it is best to draw the "T" bottom side up. Locate points and draw connecting lines

as shown. Cut the pieces (4) very carefully and put them in a small envelope with appropriate lettering, such as: "Can you make T in five minutes?" or "These pieces make T."

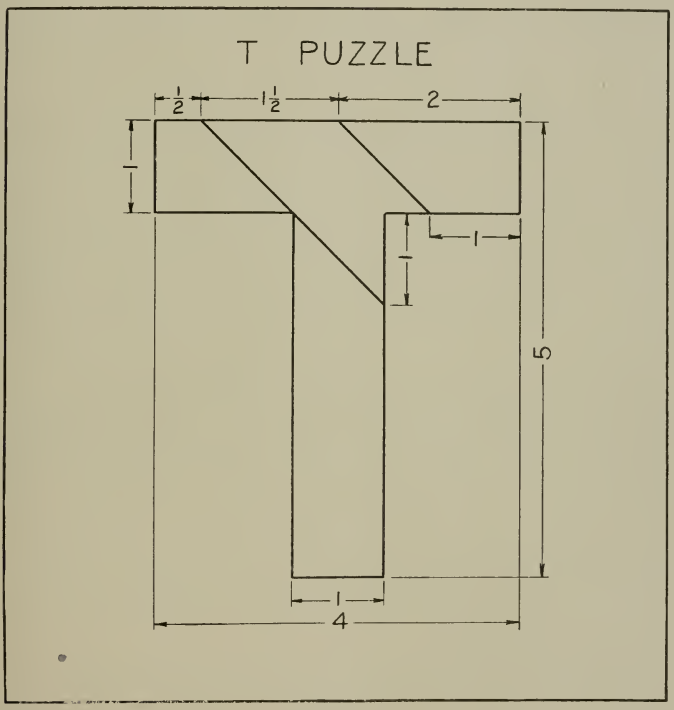


PLATE 5

BAGS.

Materials: Gingham, cretonne, etc., thread and cord.

These bags are designed to hold checkers or picture puzzles. They should be made of material that is strong and not too easily soiled. On the contrary do not choose dingy unattractive colors, nor stiff material that cannot be drawn up by the draw string.

The bags should be large enough to hold contents comfortably and yet without the use of unnecessary material, not only for conservation of materials and time, but also space and weight in the soldier's possessions,—to him most valuable assets. Neither should a bag be made which is too small to be handled comfortably.

The actual size of the bags is somewhat a matter of individual choice, but in giving directions it is most desirable to have a standard size. After some experimenting it has been found that a bag 2 1-2″x3″ when completed answers all requirements for holding cardboard checkers. For wooden checkers and for picture puzzles of the sizes recommended a larger bag is needed and for this say 4″x5″ for the completed bag.

In cutting the bags plan to have a seam at each side, or at the bottom and one side, which ever works out to the best advantage.

If the bags are to be made by the sewing classes, the teacher will find here opportunity for having seams sewed by hand and finished either with overcasting or French method. The top should be nicely hemmed and if desired two button holes may be worked at opposite sides of the hem, and on the outside thru which to pass the draw strings.

If production is the sole aim and speed is required, most of the sewing may be done by machine and the strings inserted under the edge of the hem.

For draw strings use strong cord or narrow tape. Have them long enough to tie comfortably, but not so long that they will dangle in the way.

To insert the strings either of the following methods is recommended.

A: Begin at a side where there is a seam, and with blunt or tape needle run the string round the top of the bag inside the hem; leave one end out and bring the other out to join it, tying them together with a strong knot. Begin at the opposite side of the bag with a second string and insert like the first. Be careful not to catch the needle in the side of the bag or in either string as this prevents drawing up well. When the second string is run in and tied the bag may be closed by pulling each string.

B: Insert only one string by the same method as described. Leave tied ends long enough to loop around the mouth of bag. Then pull ends through the loop and thus tighten the string.

DOMINOES.

Materials: Light weight cardboard of bright color, heavy weight cardboard of dark color, or newsboard darkened by a wash of black ink, or the light weight cardboard may be black, under which plain newsboard maybe used.

Each domino is 3-4″x1 1-2″, and when completed a set of double 6's stacks to a height of about 2″, and of double 9's to 4″. Occupying so small a space, and being very light weight makes them especially desirable for the soldier's pocket or kit.

The completed dominoes consist of two thicknesses of cardboard, on top the light weight in which holes have been punched, and beneath this the heavy cardboard showing through the holes. For punching holes a conductor's punch with 1-8″ round hole is recommended altho a heavier and more expensive punch may be used.

On a sheet of light weight cardboard or construction paper of any convenient size, draw a line, lengthwise and near one edge. Beginning 1-4 inch from one end, lay off on this line 1 1-2 inches several times. At each end mark erect perpendiculars by using a triangle and on each of these perpendiculars lay off 3-4 of an inch several times. Connect opposite points and also locate on top line points directly opposite those on the base. When these are connected the surface of the cardboard will be divided into rectangles 3-4″x1 1-2″, each of which represents a domino. These should be divided into halves by a line across the center, but which does not reach quite to the edge of each domino.

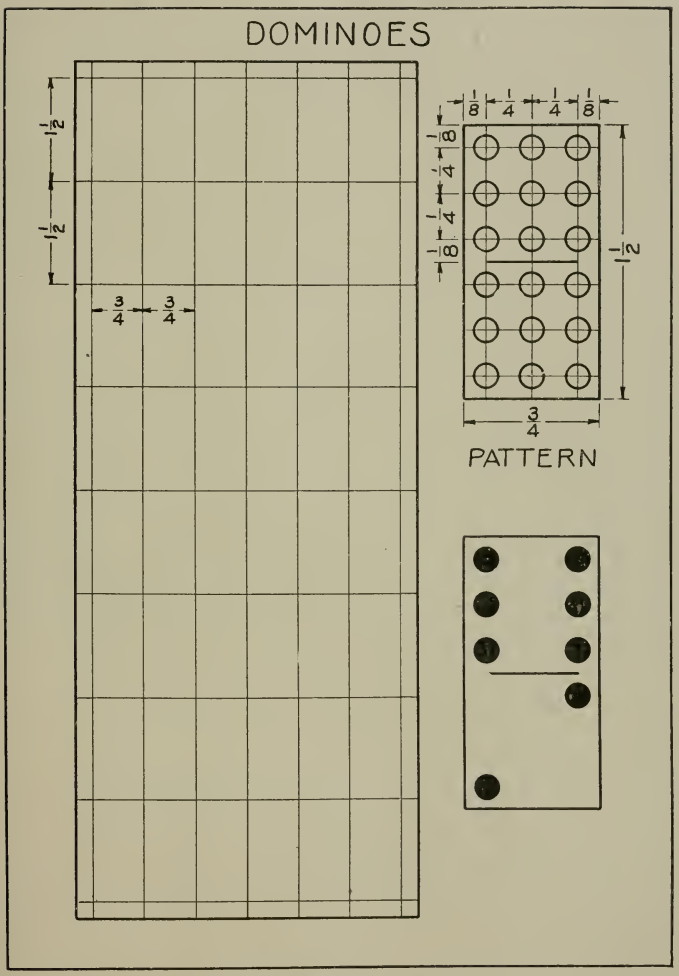


PLATE 6

The next step is to mark off on the dominoes the "spots" which are necessary for the set. The most practical way to accomplish this is to make a "dummy" or pattern by which all the dominoes are marked out (See Plate 6.) Lay out a "double nine" as shown in the drawing and at each point punch a hole. Then cut to correct size. By laying this on each domino, and marking with a pencil point through the holes, any combination from 1 to 9 may be made. Before punching these holes, the cardboard should be cut into strips of the full length and two dominoes wide.

By no means cut them into single dominoes. Now punch all the holes necessary for the set and paste each strip onto the heavy cardboard. In pasting do not place the light cardboard close to the edge of the heavy cardboard but leave a margin so that all edges may be trimmed on the cutter. After pasting leave under weight until thoroughly dry. Then by means of the cardboard cutter, cut all the strips, first the long edges and then into individual dominoes. Each set should be carefully checked up to see that it is complete, and then fastened together by a rubber band or twine. Domino Cases may be made to hold them or they may be put in small bags.

DOMINO CASE.

Materials: Newsboard, vellum, eyelet, macreme cord.

Plate 7 suggests two sizes, the smaller to hold sets of double 6, and the larger to hold sets of double 9.

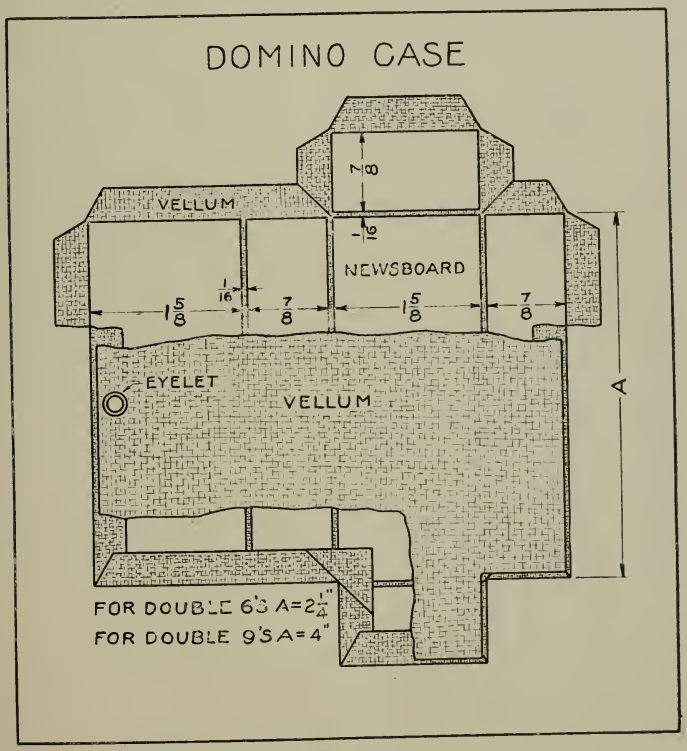


PLATE 7

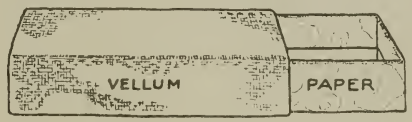
Cut the separate pieces of newsboard and correctly arrange them on a piece of vellum. As an aid to a proper alignment, mark on the back side of the vellum with pencil the location of the bottom of the case, and extend all lines to the edge of the vellum. Use these lines as guides in placing the other pieces, between which a space of about 1-16″ should be left. Cut the vellum so that it extends beyond the newsboard for 1-2″ or more, but do not cut the corners until after the newsboard is pasted to the vellum. To accomplish this, the paste (see Materials) should be evenly spread over the surface of the vellum with a good brush, the newsboard laid on it, to fit the lines previously drawn, and the whole turned over and rubbed on the right side. Make the proper cuts at the corners, turn over the vellum at the edges and carefully rub it down.

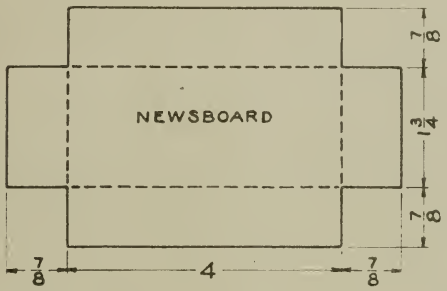
At the four inside corners, the vellum spreads wide apart. If desired an extra piece of vellum may be pasted on to cover the space as shown in the drawing.

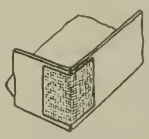
The cutting of the lining presents some difficulties but with patience may be made to fit. On the back side of the vellum draw the lining of the exact size of the case, and cut just within the lines. Paste this to the inside of the case, crease the folds by drawing over them the edge of a rule or bone folder, and dry flat under weight.

When dry insert an eyelet in the front edge of the cover. Through this loop a piece of macreme cord (see Fig. 3), and when dominoes are in the case use this to tie around it.

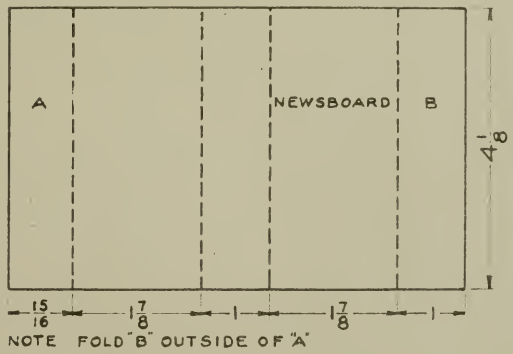
SLIP BOX







VELLUM STAY



NOTE FOLD "B" OUTSIDE OF "A"

PLATE 8

SLIP BOX.

Material: Newsboard, vellum, thin paper.

This box (Plate 8) may be used instead of the domino case to contain the dominoes; or by varying the size it may be used for other purposes such as holding checkers or a picture puzzle. The size here given is for holding dominoes.

Accurately lay out the box on the newsboard as shown in the drawing and cut on the outside lines, preferably with the cardboard cutter. Along the edges of the base score with a sharp knife or strong pin and turn up the sides with the lines **outside.** The corners should be stayed with a strip of vellum as shown to hold the box in shape.

Cut a strip of lining or other thin paper long enough to extend around the box and lap over about 1-2 inch; the width should be at least one inch greater than height of sides. Paste this strip to the sides of the box allowing surplus width to extend equally above and below.

At each corner of the box make cuts in the paper so that it may be pasted to the inside of the box at one edge and to the bottom of the box at the other. It is advised that no attempt be made to line either the inside or the base. The case should be enough larger than the box to allow the latter to slip easily but not fall out. By making each side of the case 1-8 of an inch wider than the corresponding sides of the box, this is accomplished. It will be noticed that three narrow faces are shown in the drawing. Lap the broader outside face B over the narrower one A and paste securely. This gives stability to the outside.

Cut a strip of vellum long enough to paste around the box and extend beyond it at least 1-2 inch at each end. Paste this to the foundation; at each corner make cuts in the vellum, and paste projecting parts to the inside of the foundation.

CHECKER BOARD.

Materials: Newsboard, vellum, squared paper.

This checkerboard (Plate 9) is planned with squares 3-4″ in size, and of these there should be 8 on each side alternating dark and light. By making a foundation 7 1-2″ square, it gives a margin of 3-4″ on all sides, resulting not only in a satisfactory appearance, but providing a place for extra checkers. This board folds through the center and is small enough to be easily carried in the pocket.

Cut two pieces of newsboard 3 5-8″ strong x7 1-2″, and a piece of vellum about 9″ square. It will be observed that the width of the newsboard is less than half the length in order to allow a space between the two pieces of newsboard without which the completed board would not close.

On the back side of the piece of vellum mark off in heavy lines the positions of the two pieces of newsboard and allow 1-4″ or 3-16″ space between them. Paste the newsboard to the vellum as already described, cut the corners and paste the edges. A strip of vellum 2″x7″ should be pasted to cover the space between the two pieces of newsboard and extend well onto them.

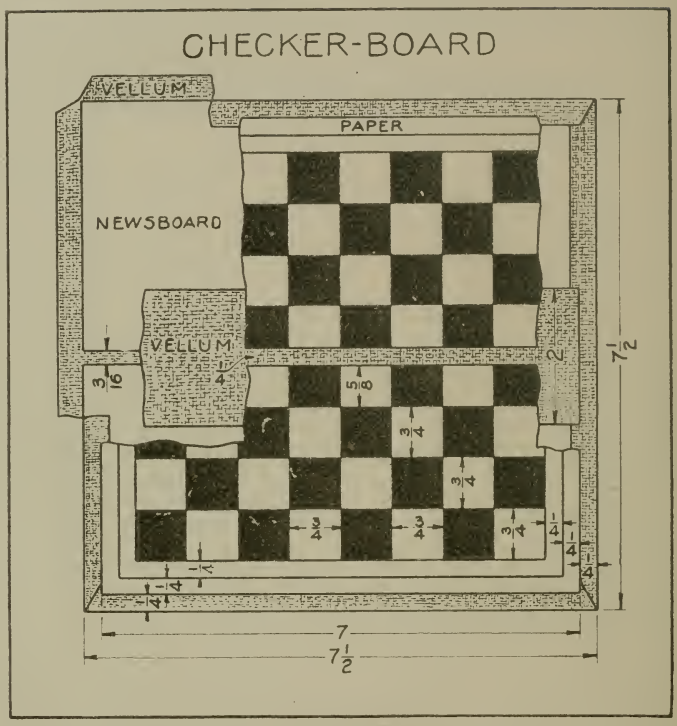


PLATE 9

The paper used for lining may be prepared in one of several ways, either by machine or by hand, and may be in one piece or two. The former is less likely to be confusing. The easiest and quickest method is to have the squares printed in dark ink on white or light gray paper of good quality, and fairly tough. The use of linoleum is suggested as one method of printing squares, or a line plate may be made, the squares printed from it and finished linings for the

checkerboards furnished to those who are making them. The light squares may be left as they are or may be colored with water color, crayon, or oils. All the outside square should be lined in, either when printed or afterward by hand. A border line about 1-4″ outside the squares adds very much to the general appearance.

If all the marking and coloring must be done by hand, paper commercially ruled into 1-4″ squares is recommended. This secures accuracy, and saves much tiresome ruling. Three such spaces on each side form a 3-4 inch square and when the checker board is laid off by small dots on outside lines, proceed to color alternate squares by one of the following methods:

A. With soft pencil darken alternate squares leaving others of the original color. Begin with the upper row, and take successive rows downward. Across the paper lay a rule just below the lower edge of the squares to be darkened. With the pencil make vertical strokes only, using the side of the pencil to give an even surface free from ridges. Be careful with the lines at the right and left edges that they do not extend into the adjoining space. The edge of the rule will stop the strokes at the right place at the bottom and they should not extend quite to the top as this can be adjusted later. When all rows are finished, turn paper around so that what was top is now bottom, and complete squares by the same method.

B. Instead of pencil, colored crayons may be used in the same manner as already described.

C. Crayons of two colors may be used in alternate squares, or one color and a black pencil. Orange and black or red and black are pleasing combinations.

D. Ink or water may be applied with a brush.

When completed place the "board" so that a dark square is in the upper left and lower right corners respectively, and cut open vertically, removing about 1-4″ from the center two halves. If no space is left, the paper soon cracks in folding; if too little space is left, the edges soon turn and later become "dog-eared"; if too much is left, it is confusing to the players, as theoretically there should be no space at all. Paste these pieces to each half of the cover, placing them about 1-4″ apart, and dry flat under weight.

When thoroughly dry, the inner surface should be varnished with shellac or valspar to give stability to the color. Otherwise, it soon becomes rubbed and the appearance, if not the utility, of the board is spoiled. One coat is sufficient to hold the color, but if a polished surface is desired two are needed.

The question of coating the outside with shellac or other polish is an open one, and may be decided to suit the individual taste.

It is sometimes desirable to show that an article is the product of the school room, and in this case a neatly printed label with a space for the pupil's name, etc., may be pasted to the outside.

If larger boards are desired make the squares one inch in size leaving 3-4″ margin. The foundation consists of two pieces of newsboard, each 4 5-8″x9 1-2″ and the vellum for covering should be a 11 1-2″ square. The process of assembling is like that used in the small board.

CHECKERS.

I. Dowels. Checkers may be made from dowels 5-8″ or 3-4″ for small checkerboards and 7-8″ or 1″ for for the larger boards. Broom handles, etc., may be used as substitutes for the dowels.

The checkers should be of a uniform thickness, and this is best secured by using a combination mitre-box, saw and gauge. If this is not available, any other means may be employed to saw the dowels into disks 1-8″ or 3-16″ in thickness.

Lay a piece of sandpaper on a flat surface and rub the checkers on this to remove saw marks. Two grades of sandpaper give a better finish than one.

To play the game, it is necessary that there should be two colors of checkers. Some woods present sufficient difference in their natural colors to serve this purpose, but it is generally better that one set at least should be artifically colored. For this, use stain or ink. Place some of the fluid in a shallow dish, and drop the checkers into it. Remove at once with nippers or two sticks, and lay on a paper to dry.

Most stains will stand some water, but common ink would wash out if rained on. So to preserve the color, checkers dyed with ink should afterward be dropped into a thin shellac and taken out and dried. Those of natural color should also be shellaced as they keep clean much longer. After the shellac is dry, there is a little roughness on the surface. If this is rubbed off with fine sandpaper, the checkers are much more agreeable to handle. Twelve checkers of each color are needed for a set but three or four extra ones may be added. Put these in a strong bag securely tied.

II. Button Molds. Instead of using dowels, as just described, wooden button molds may be colored and used.

III. Buttons. Two contrasting colors of flat buttons make excellent checkers.

IV. Cardboard. Disks of pressboard with printed representations of chessmen are shown in Figure 2. Either chess or checkers may be played with these disks on the checkerboard.

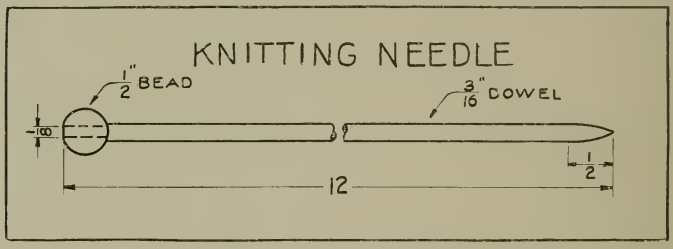


PLATE 10

KNITTING NEEDLES.

Materials: Dowels 3-16″ for sweaters, or 1-8″ for wash clothes etc.

These may be purchased at a hardware store in 36″ lengths. Kindergarten beads of wood on sale at a School Supply house, Button molds of wood on sale with dressmakers' supplies. The larger dowels (3-16) should be cut into 3 pieces each and the smaller dowels (1-8) into 4 pieces each. Each piece makes a needle.

One end of the dowel (see Plate 10) should be whittled to form a symmetrical point which should taper about 1-2 inch. The other end should be finished in such a way that the stitches when knit on will not slip off. Three methods are suggested:

(A). Warm sealing wax may be molded in the hand to form a ball or cylinder enclosing the end of the dowel.

(B). Glue a "kindergarten bead" to the end. As these beads have holes smaller than 3-16″ dowels one must be made to fit the other.

1. With a drill bit enlarge the hole in the bead so that the dowel may be inserted.

2. Cut a "shoulder" on the dowel leaving a projecting pin of correct size and length to fit the bead.

(C). Attach a small "button mold" by the same process described for a kindergarten bead.

TRENCH CANDLES.

The use of candles is quite general in many camps and "trench candles" possess the advantage of giving far more light and heat than those of the ordinary kind. Because of the relatively large amount of space they occupy, they are not always acceptable for transportation in quantities, but because they are liked by individual soldiers for their personal use directions for candle-making are here given. It is recommended that the ultimate desirability of the candles be assured before they are made.

Materials.

The candles are made of rolled newspapers boiled in candle wax or fat. The newspapers should be of cheap quality, usually those that are sold for one cent.

Broken candles, candle ends or any material such as wax, paraffine or tallow from which candles are made should be used for boiling.

Rolling.

Fold the newspaper lengthwise through the center of each page and cut along the crease with any thin bladed knife. Several sheets may be cut at once. They will be the full length of the paper and approximately 9 inches wide.

Upon a table lay 8 such sheets one above another, with their edges as evenly placed as possible and a short edge toward the worker.

Beginning at the nearest edge turn all the pieces in one fold of 3-4 of an inch and crease very hard.

At the center of this fold turn over about 1-4 of an inch and work it toward one edge, then holding this very firmly work toward the opposite edge.

Repeat this process 3 or 4 times; each time the fold will be somewhat larger. The success of the candle rolling depends almost wholly upon a proper beginning.

As soon as possible lay the palms of the hands flat upon the fold and roll, bearing on with considerable weight.

When about 1-3 the length of the paper has been rolled turn back 4 sheets so that their edges are under the roll and continue rolling to the fold just made.

Turn back 2 sheets to the roll and continue to this fold.

Turn back one sheet and roll to edge of single remaining sheet.

Grasp the roll firmly in one hand and knock the ends alternately upon the table to even any projecting pieces of paper.

The single sheet at the edge should now be pasted to the roll throughout its length and laid aside to dry. Library paste or home made flour paste is recommended. Do not use glue.

To be satisfactory the rolls should be almost as hard as wood.

Cutting.

Use only rolls that are dry. Cut into 1 1-2 inch lengths. For this purpose use a sharp knife, a tobacco cutter or a saw. When feasible it is advised that rolls be sent to a machine shop to be cut by a power saw.

Boiling.

When melted there should be enough wax or fat to cover completely the paper rolls. It is better to use a large kettle, both to boil a large quantity at one time

and to lessen the danger of boiling over. The wax should come to the boiling point but if it smokes or gives off an odor it is too hot. Leave the rolls in the hot wax for an hour, then remove and place in single layers to cool.

Use.

When thoroughly cool the candle is ready for use. It may be lighted at either end and will stand on a stone or a handful of earth. If the flame becomes dull the candle should be "snuffed" by brushing off the charred paper. One candle will burn three-quarters of an hour and three of them placed close together will boil a quart of water in fifteen minutes.

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